

SCIENCE

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Home-built **ELECTRIC DEHYDRATOR**

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This home-size drier is especially designed for the farm family that has a portable $\frac{1}{4}$ -hp. motor, and screw-in heating elements—the kind used in a chick brooder. The fan is of wood.

Maximum capacity is 16 pounds of food as prepared for drying, or 2 pounds to the tray.

This drier has been adapted from a design originally developed at the University of Maryland.

U.S. DEPARTMENT of AGRICULTURE

AWI-76



MATERIALS NEEDED

The only new strategic materials needed are bearings, shaft, hardware, wiring materials, and thermostat. Dimensions of the lumber as given are the actual sizes to be used in building the drier.

Lumber for—

Fan hubs: X, 4 pieces, $\frac{3}{4}$ " x $1\frac{3}{8}$ " x 14".

Fan housing:

Sides:

B, 2 pieces, $\frac{3}{4}$ " x $3\frac{1}{2}$ " x $19\frac{1}{4}$ ".

C, 2 pieces, $\frac{3}{4}$ " x $3\frac{1}{2}$ " x $15\frac{1}{4}$ ".

D, 2 pieces, $\frac{3}{4}$ " x $3\frac{1}{2}$ " x $14\frac{1}{4}$ ".

E, 2 pieces, $\frac{3}{4}$ " x $3\frac{1}{2}$ " x $8\frac{1}{2}$ ".

G, 2 pieces, $\frac{3}{4}$ " x $3\frac{1}{2}$ " x 4".

Bottom: H, 1 piece, $\frac{3}{4}$ " x $10\frac{1}{4}$ " x $23\frac{3}{8}$ ".

Inside baffles:

L-1, 1 piece, $\frac{3}{4}$ " x $10\frac{1}{4}$ " x $13\frac{1}{2}$ ".

L-2, 1 piece, $\frac{3}{4}$ " x $9\frac{1}{2}$ " x $10\frac{1}{4}$ ".

L-3, 1 piece, $\frac{3}{4}$ " x $7\frac{1}{2}$ " x $10\frac{1}{4}$ ".

Front baffle:

I, 1 piece, $\frac{3}{4}$ " x $4\frac{5}{8}$ " x $10\frac{1}{4}$ ".

K, 1 piece, $\frac{3}{4}$ " x 8" x $10\frac{1}{4}$ ".

Outer cabinet:

Side frames:

2 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x 14".

2 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x 16".

4 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x 42".

2 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x $25\frac{1}{2}$ ".

Baffle slide:

Y, 2 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x $27\frac{1}{2}$ ".

Top and bottom frames:

2 pieces, $1\frac{1}{2}$ " x 3" x 18".

2 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x 18".

4 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x $39\frac{1}{2}$ ".

Back frame:

2 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x $20\frac{1}{2}$ ".

2 pieces, $\frac{3}{4}$ " x $1\frac{1}{2}$ " x 18".

Vent frames:

4 pieces, $\frac{1}{2}$ " x $\frac{3}{4}$ " x 9".

2 pieces, $\frac{1}{2}$ " x $\frac{3}{4}$ " x 4".

Top edge of bottom front: 1 piece, $\frac{1}{2}$ " x $1\frac{1}{2}$ " x 18".

Bottom edge of top front: 1 piece, $\frac{1}{2}$ " x $\frac{3}{4}$ " x 22".

Tray baffle: 1 crosspiece, $\frac{3}{8}$ " x $\frac{1}{2}$ " x 18".

Tray frames:

32 pieces, $\frac{1}{4}$ " x $\frac{3}{4}$ " x 18".

16 pieces, $\frac{1}{2}$ " x $\frac{3}{4}$ " x 18".

Tray slides: Z, 16 pieces, $\frac{3}{8}$ " x $\frac{3}{8}$ " x $17\frac{1}{4}$ ".

Tray stops: 2 pieces, $\frac{3}{8}$ " x $\frac{3}{8}$ " x 12".

Piece at ends of fan blades: 16 pieces, $\frac{3}{8}$ " x $\frac{5}{8}$ " x $2\frac{1}{2}$ ".

Blocks to hold bearings: 4 pieces, $1\frac{1}{2}$ " x 5" x 5".

$\frac{1}{4}$ " plywood or similar material—2 sheets, 4' x 8'; 1 sheet, 4' x 5' (see cutting plan, fig. 1)—

Fan blades: 8 pieces, $2\frac{1}{2}$ " x $9\frac{1}{4}$ ".

Cabinet pieces:

Sides O, 4 pieces, $25\frac{1}{2}$ " x $49\frac{3}{4}$ ".

Inside top P, 1 piece, 18" x $42\frac{7}{8}$ ".

Inside bottom R, 1 piece, 18" x $43\frac{1}{8}$ ".

Outside top and bottom S, 2 pieces, 22" x 42".

Inside back U, 1 piece, 18" x 22".

Outside back T, 1 piece, 22" x 26".

Top front M, 1 piece, $17\frac{3}{4}$ " x 22".

Bottom front N, 1 piece, $14\frac{1}{4}$ " x 22".

Vent covers, 2 pieces, $3\frac{3}{4}$ " x 5".

Tray baffle: V, 1 piece, 18" x $23\frac{1}{4}$ ".

$\frac{3}{8}$ " plywood or similar material—1 sheet, 3' x 4' (see cutting plan, fig. 1)—

Fan ends: 2, 14" circles.

Fan housing:

Sides:

A, 2 pieces, $19\frac{1}{2}$ " x 22".

F, 2 pieces, $4\frac{3}{4}$ " x $12\frac{1}{2}$ ".

Front baffle:

J-1, 1 piece, $6\frac{5}{8}$ " x $9\frac{1}{2}$ ".

J-2, 1 piece, 7" x $9\frac{1}{2}$ ".

Insulation board, $\frac{1}{2}$ " thick, from which is cut—

Inside front top cover, 1 piece, $15\frac{1}{2}$ " x 19".

Inside bottom front cover, 1 piece, $10\frac{1}{2}$ " x 18".

Hardware—

Screws and nails.

Screening ($\frac{1}{8}$ " mesh): 8 pieces, $17\frac{3}{4}$ " x $18\frac{1}{2}$ ".

2 hinges for door.

Bolts for hinges.

8 bolts for blocks on which bearings rest.

Hook and eye for door.

$\frac{1}{2}$ " metal shaft for fan (30" long).

$6\frac{1}{2}$ " pulley to fit fan shaft.

$3\frac{1}{2}$ " pulley to fit motor shaft.

Belt to fit both pulleys.

Electrical materials—

Thermostat.

Wire for making electrical connections.

Cord and outlet plug.

4 screw-in type heating elements, 300 watts each.

4 porcelain (or other) bases for heating elements, with screws to fit.

4 porcelain (or other) bushings for wires as they come through the wall of drier.

NOTE: All wiring and wiring materials should meet the requirements of the National Electric Code of the National Board of Fire Underwriters.

Other materials—

Glue.

Bulk insulation for between walls of cabinet.

Sheets of fire-resistant material for lining heating chamber. (Whatever is available on local market.)

First cut or have cut all lumber listed in the materials needed. Figure 1 shows pieces of lumber that need special cutting and lay-out for cutting plywood.

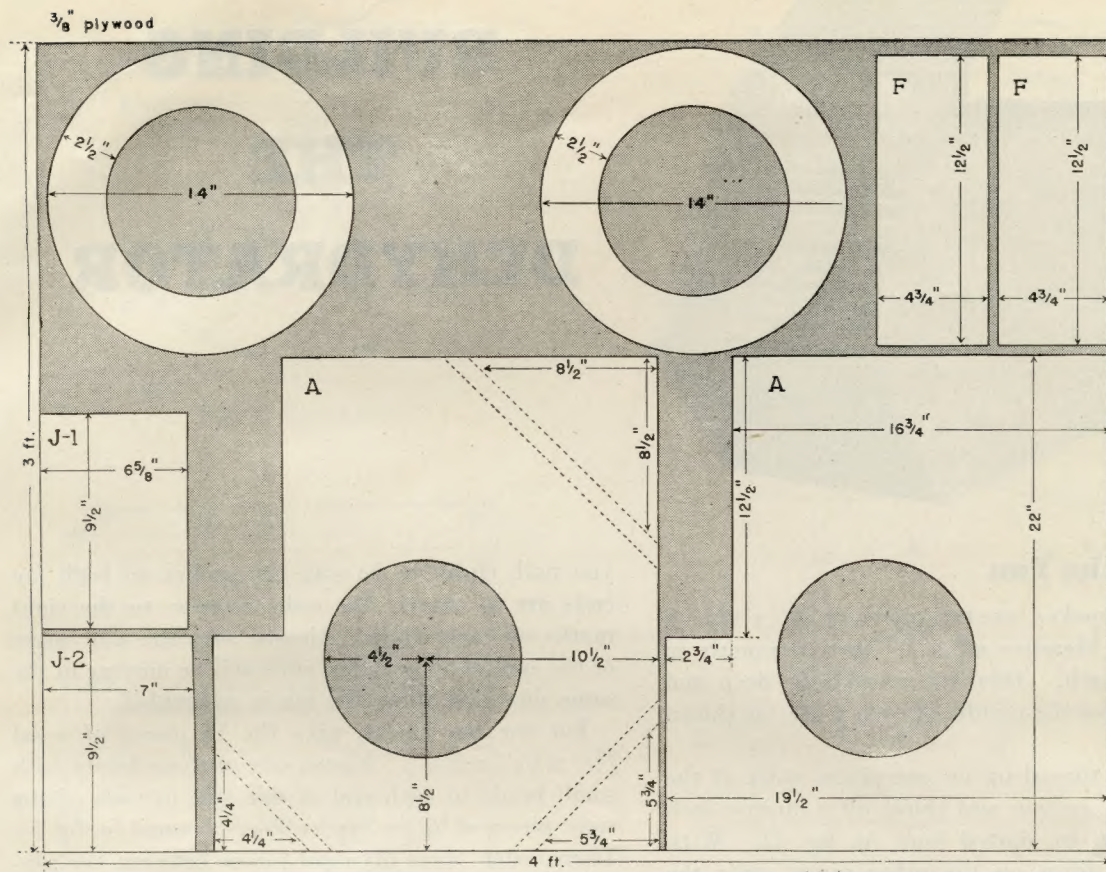
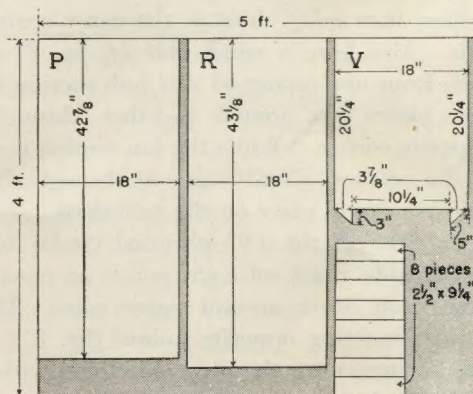
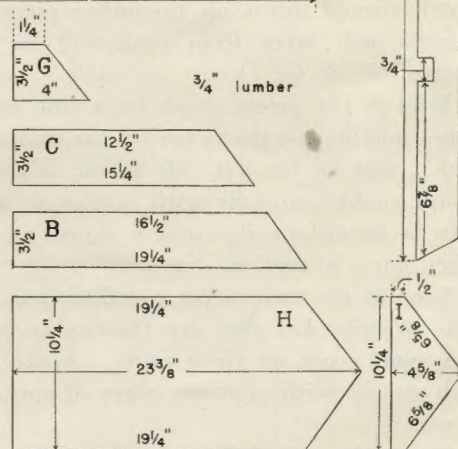
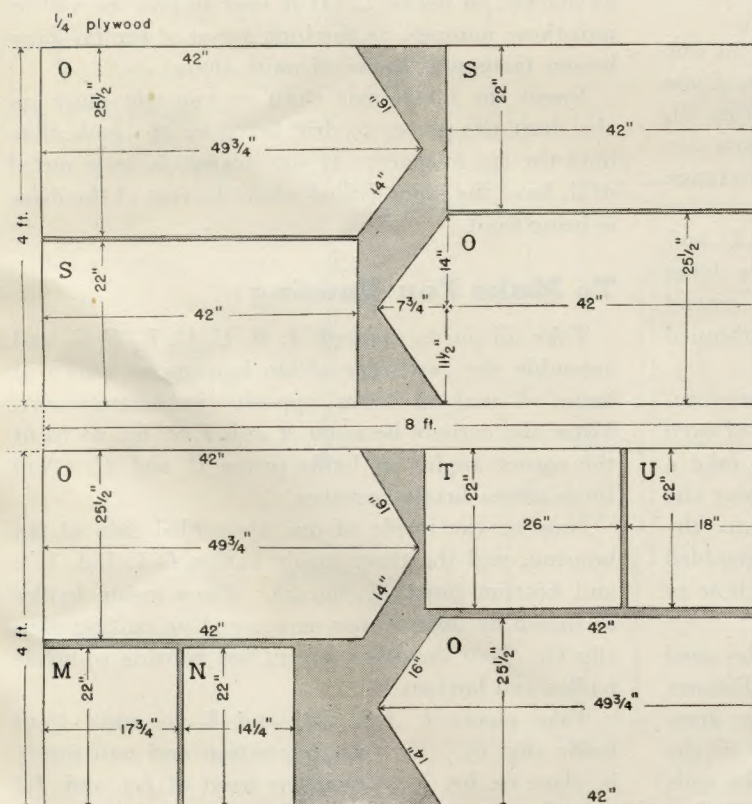
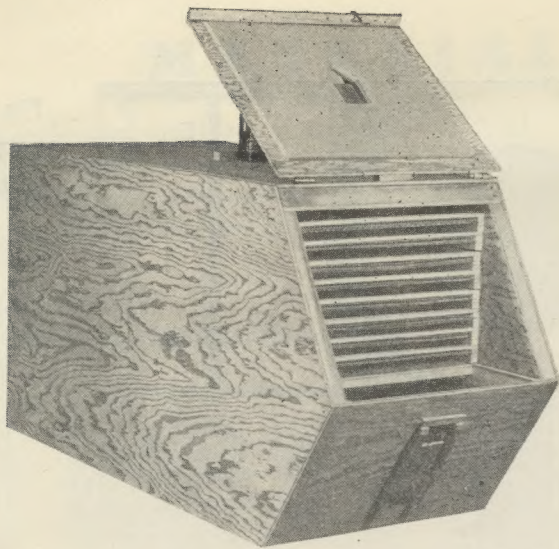


Fig. 1
CUTTING
PLANS





BUILDING THE DEHYDRATOR

To Make the Fan

For the fan spokes, use two pieces of $\frac{3}{4}'' \times \frac{13}{8}'' \times 14''$ lumber. Measure off a 2'' section exactly in the center of each. Then cut a notch $\frac{3}{8}''$ deep and $\frac{13}{8}''$ wide across the middle of each piece, as shown in figure 2.

With notch turned up on one piece, start at the ends of the 2'' section and chisel off a quarter-inch layer as shown by dotted lines (a, fig. 2). With notch turned down on the other piece, take the quarter-inch layer from each end as shown by dotted line (b, fig. 2).

Whittle the pieces down to a thin edge on one side—making the thin edge on the right side of one end c, and on the left side of the other d (fig. 2). Shape spokes carefully with sandpaper at area e—this is important in cutting down air resistance when fan is in motion.

Now fit the two pieces together (see fig. 2) and glue or nail. Let glue dry thoroughly before doing any more work on these parts. Make the second hub section with opposite edges of spokes thinned down.

When the two hub pieces have been fitted together, bore a $\frac{1}{2}''$ hole in the exact center of each hub. Also bore a small hole (f, fig. 2) to take a nail, from one corner of this hub section where the two pieces are joined together through to the opposite corner. When the fan section is assembled in the cabinet, a nail is driven through this hole to hold the fan in place on the axle shaft.

On each of the 14'' plywood circles to be used as fan ends, mark off eight points an equal distance from each other around outer edge. Then draw lines connecting opposite points (fig. 2). Nail the hub sections onto the plywood circles with the ends of the spokes between the lines just drawn. Before

you nail, check to be sure the spokes on both fan ends are in exactly the same relation to the eight marks on each circle. Also be sure the thin edges of the spokes on both fan ends will be moving in the same direction when the fan is assembled.

For the fan blades, take the 16 pieces of wood $\frac{3}{8}'' \times \frac{5}{8}'' \times 2\frac{1}{2}''$. Fasten one of these firmly with small brads to each end of one side of each of the eight pieces of $\frac{1}{4}'' \times 2\frac{1}{2}'' \times 9\frac{1}{4}''$ plywood (a, fig. 3). Then fasten these plywood pieces between the plywood circles, placing the ends directly on the lines as marked in figure 2. It is best to glue as well as nail these joinings, as the high speed of the fan may loosen fastenings made of nails alone.

Insert the metal axle shaft so you can mark on the shaft the places to drill holes for the nails that hold the fan in place. If you do not have a metal drill, have the holes drilled while the rest of the drier is being built.

To Make Fan Housing

Take all pieces marked A, B, C, D, E, F, G, and assemble the two sides of fan housing as shown in figure 4, making them opposite in arrangement. Miter the corners between A and F (c, fig. 4) to fit the corner angles on baffle pieces B and C. Nail these pieces firmly together.

Now to the inside of one assembled side of fan housing, nail the three inside baffles L-1, L-2, L-3, and bottom piece H (fig. 5). Place inside baffles as shown by dotted lines on piece A on cutting plan (fig. 1). Nail the other side of fan housing to inside baffles and bottom H.

Take pieces I, J-1, J-2, and K to make front baffle (fig. 6). Fit this in position and nail firmly in place (a, fig. 7). Cover the front of J-1 and J-2 with fire-resistant material.

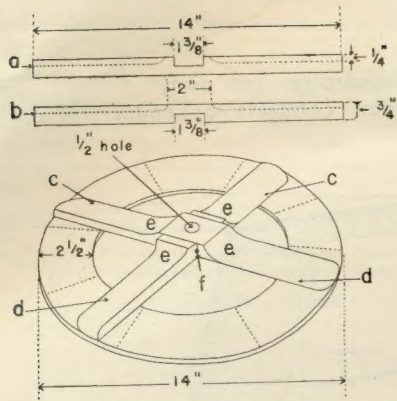


Fig. 2 Fan ends

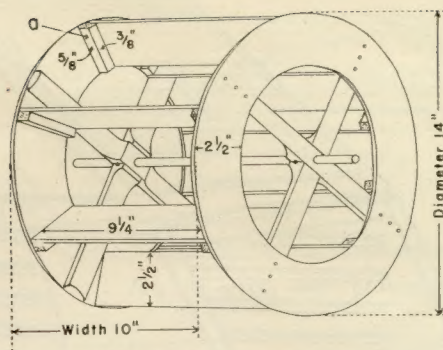


Fig. 3 Fan construction

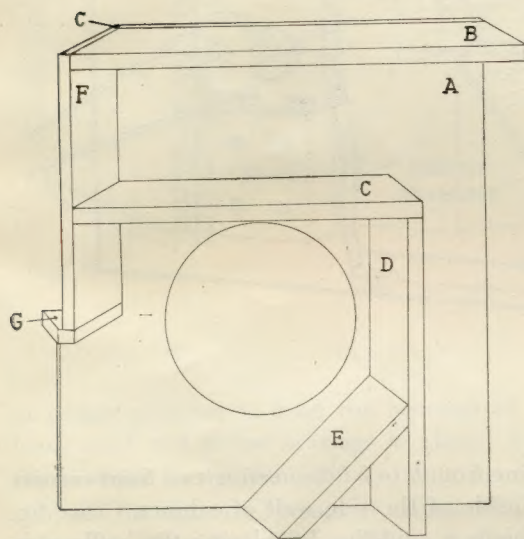
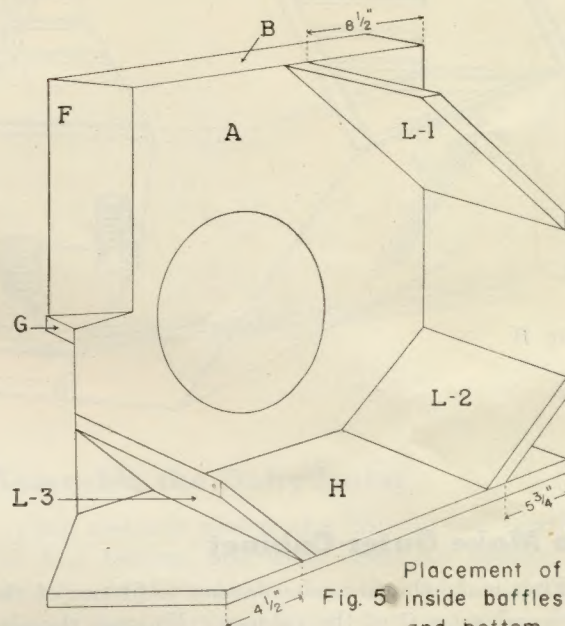


Fig. 4 Assembly of one side of fan housing



Placement of inside baffles and bottom

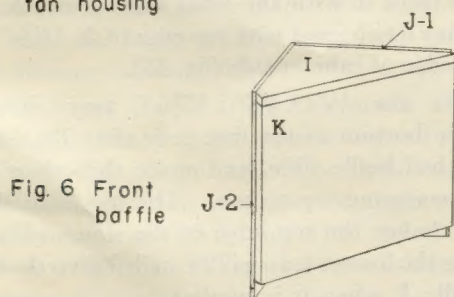
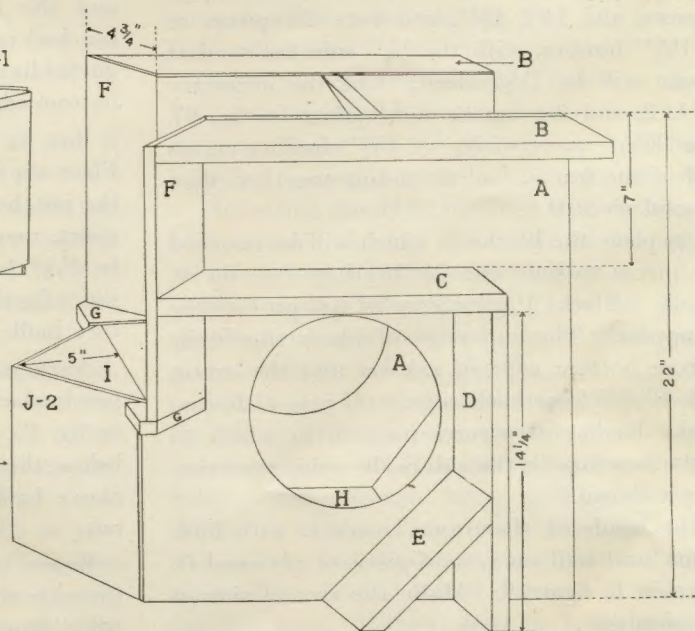


Fig. 6 Front baffle

Fig. 7 Assembly of entire fan housing



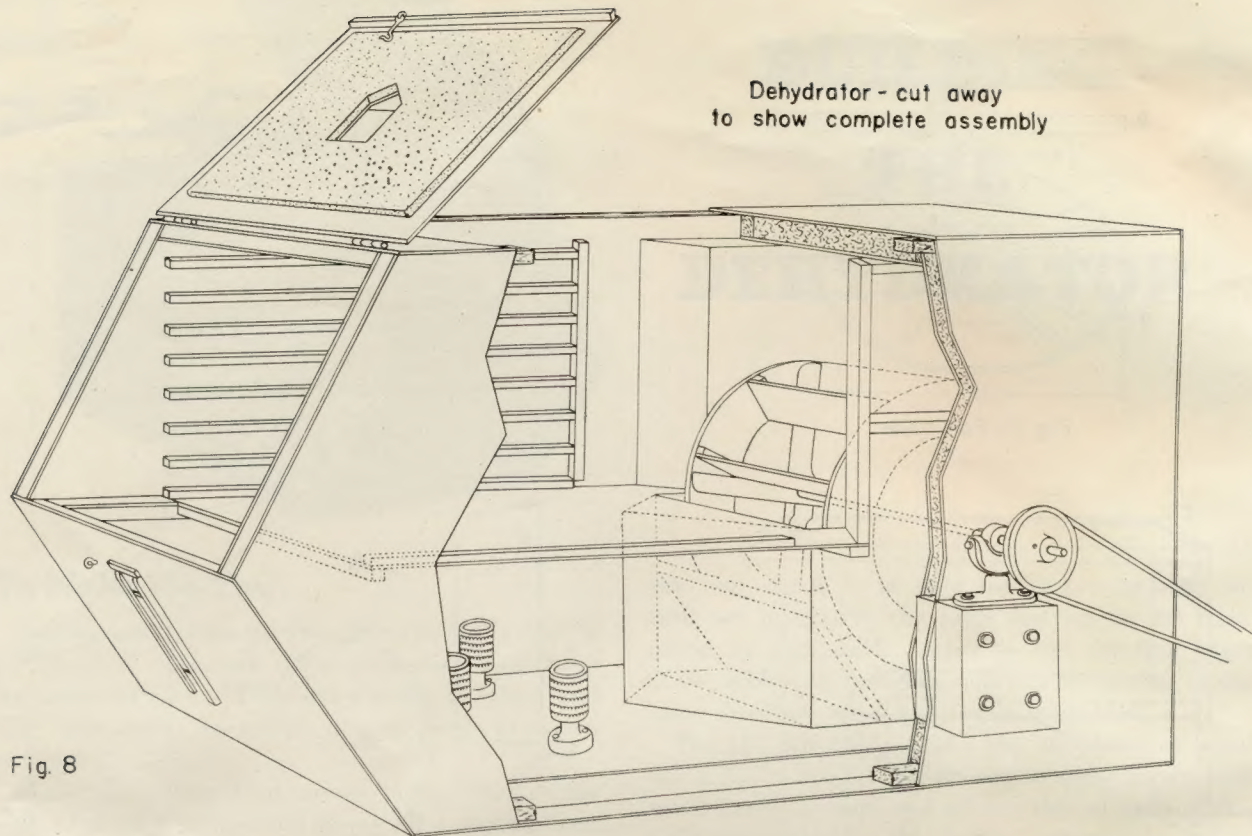


Fig. 8

To Make Outer Cabinet

First make the five-sided frames to fit two of the plywood sides *O* of the cabinet. Fit onto the plywood piece, the 14'', 16'', and two 42'' pieces of $\frac{3}{4}$ '' x $1\frac{1}{2}$ '' lumber, with the $\frac{3}{4}$ '' side flat so that the frame will be $1\frac{1}{2}$ '' deep. Cut the necessary angles 1, 2, and 3 to make tight joints (*a*, fig. 9). Use the 25 $\frac{1}{2}$ '' piece of $\frac{3}{4}$ '' x $1\frac{1}{2}$ '' lumber across the end of the frame, nail the frame together, then to plywood piece *O*.

Nail in place the blocks to which will be fastened outside pieces to hold the fan bearings (see fig. 9, also fig. 8). Blocks $1\frac{1}{2}$ '' x 5'' x 5'' will provide the right support. The top edge of block should be 9 $\frac{1}{2}$ '' from bottom edge of cabinet and the center of block 10 $\frac{1}{2}$ '' from back edge. (If you wish, you can make boxlike structures instead, in which to recess the bearings in the side walls—this construction is not shown.)

Fill the inside of the frame, space *c*, with bulk insulation and nail on second piece of plywood *O*, as shown in *b*, figure 9. Make the second side of cabinet similarly.

To put in baffle slides *Y* and tray slides *Z*: Draw a

dotted line from *b* to *b'* connecting two front corners on the inside of the side wall of cabinet. (See fig. 13.) This is a guideline for placing the baffle slide and the front ends of the tray slides. Nail on notched piece *Y* with the front edge of notch along dotted line *b* to *b'* and with top edge of *Y*, 11 $\frac{1}{4}$ '' from bottom edge of cabinet side (fig. 13).

Put in the $\frac{3}{8}$ '' x $\frac{3}{8}$ '' x 17 $\frac{1}{4}$ '' tray slides *Z*. Place the bottom of the first tray slide 15 $\frac{5}{8}$ '' above the notched baffle slide, and space the others 1 $\frac{1}{2}$ '' apart, measuring top to top. The top slide should be 31 $\frac{1}{8}$ '' below the top edge of the side. (The two slides for the lowest tray will be nailed directly to the tray baffle *V* when it is made.)

Next nail the $\frac{3}{8}$ '' x $\frac{3}{8}$ '' x 12'' tray stops perpendicularly at the back end of the tray slides (shown in fig. 8). One end of tray stop should be 13 $\frac{1}{4}$ '' below the top of the cabinet side; the other, $\frac{1}{4}$ '' above baffle slide *Y* so baffle can be tipped to slip out.

Bore a $\frac{3}{4}$ '' hole in each side wall of the cabinet for the axle shaft (fig. 13). The center of this hole is 10 $\frac{1}{4}$ '' from the bottom of the cabinet side and 10 $\frac{1}{2}$ '' from the back. On each side, bolt the outside block

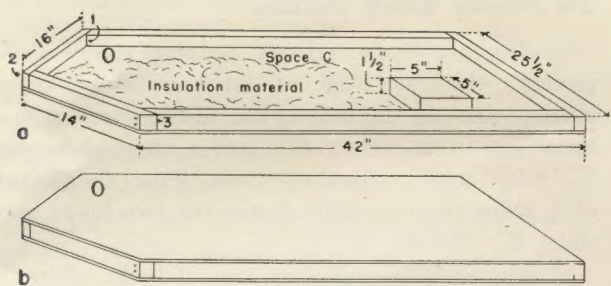


Fig. 9 Sides

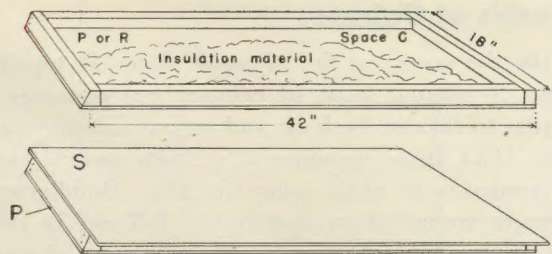


Fig. 10 Top and bottom

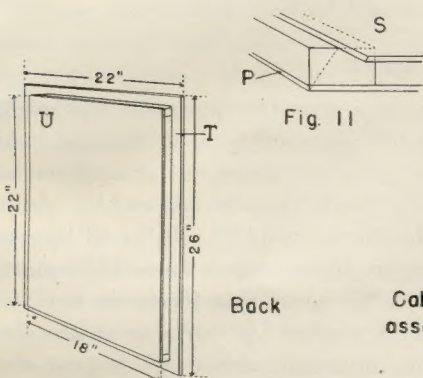
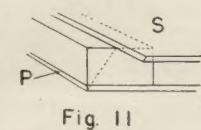


Fig. 12



Back

Cabinet assembly

Fig. 13

in proper position to hold the bearings of the size being used and fasten bearings in place. Or recess the bearings in the side wall.

Make the top and bottom of cabinet in the same manner as the sides. Fit the frame to the inside of top and bottom plywood pieces *P* and *R*. Fit outside top and bottom pieces *S* to *P* and *R*, so they are flush with the frame at the back, and extend an equal distance on each side.

Pieces *S* are shorter than the pieces *P* and *R* and will not extend to the outside edge of the front frame piece (figs. 10 and 11). Cut a full-length strip from each front frame piece, on an angle extending from outside corners of *P* (and *R*) to end of *S*. Nail frames to *P* and *R*. Fill space *c* with insulation and nail pieces *S* in place.

The back is also made from two sheets of plywood, with an insulation-filled frame between. For the frame, use two pieces of lumber $\frac{3}{4}$ " x $1\frac{1}{2}$ " x $20\frac{1}{2}$ " and two pieces $\frac{3}{4}$ " x $1\frac{1}{2}$ " x 18". Fit them on plywood piece *U*, to form a rectangle 18" x 22", and nail the frame together. Then nail frame to plywood, and fill the space with insulation. Nail onto the frame the plywood piece *T* for outside back with the edge extending an even distance on all sides (fig. 12).

Assemble the Dehydrator

First, assemble cabinet (fig. 13) and nail together the top, bottom, and sides. Slip fan housing in place inside the cabinet. Cut and nail in place a piece of fire-resistant material to cover entire floor except under fan housing (fig. 8). Fan housing will be installed later.

Put in the heating elements, following figure 18. The cabinet should be wired according to wiring diagram, figure 19. If you are not accustomed to following wiring diagrams, call in an electrician.

The wiring should be installed with the thermostat bulb inserted through the center of the top of the cabinet, about 1" back of the trays.

After wiring is completed, place the fan inside the fan housing section and put the whole section in place inside the cabinet (fig. 8).

Run the $\frac{1}{2}$ " steel shaft through from one side to the other—through bearings, side walls, and holes in hub sections. Adjust fan on shaft until the small holes bored through hubs meet matching holes drilled in shaft. Drive nails through each hole. Use nails or metal pins of a size that will make fan rigid on the shaft. If nail does not fit hole tightly, fan will rock. Adjust shaft in bearings until fan runs smoothly; then tighten bearings.

To Make Top and Bottom Front of Cabinet

In the center of the plywood pieces *M* top front and *N* bottom front of cabinet, cut openings for vents to take in fresh air and let out moisture-laden air. Cut these openings $2\frac{1}{2}$ " wide and 3" long, extended to 4" at the point (fig. 14). Build grooved frames around these openings as follows: In pieces of lumber $\frac{1}{2}$ " x $\frac{3}{4}$ " x 9" cut out a piece along one side to form a groove $\frac{3}{8}$ " wide and $\frac{1}{4}$ " deep, so that $\frac{1}{4}$ " plywood will slide along these grooved frames (fig. 15).

Nail in place a $\frac{1}{2}$ " x $1\frac{1}{2}$ " x 18" piece of lumber to the center of the top edge of bottom front (*A*, fig. 14). Then nail bottom front to cabinet as shown in figure 8. Fit the $10\frac{1}{2}$ " x 18" piece of insulation board in place inside bottom front (fig. 16), cut an opening in it to match the vent in outside piece, then nail insulation board in place. Cut and nail in place a piece of fire-resistant material over the insulation board. Top of board (*a*, fig. 16) and bottom edge of insulation board must be beveled to fit.

Fasten a $\frac{1}{2}$ " x $\frac{3}{4}$ " x 22" piece of lumber to edge of top front *M* (*B*, fig. 14). Then nail the $15\frac{1}{2}$ " x 19" piece of insulation board to the plywood so it fits snugly into the opening in the front of the cabinet. Edges have to be beveled to fit. Also cut an opening in the insulation board to match vent in plywood.

Hinge this door piece to the top of cabinet as shown in figure 16. Use bolts to hold the hinges to the door, as the plywood is too thin to hold screws. Put a hook-and-eye fastener onto the drier at the front to hold the door tightly shut. If more convenient, door may be hinged at the bottom.

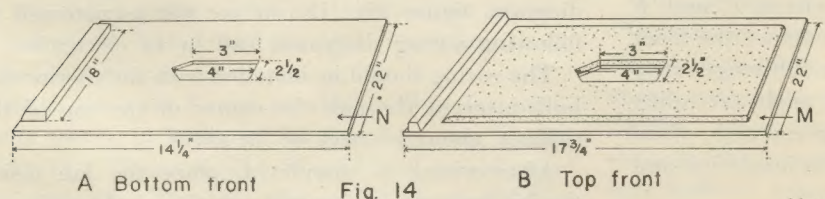


Fig. 14

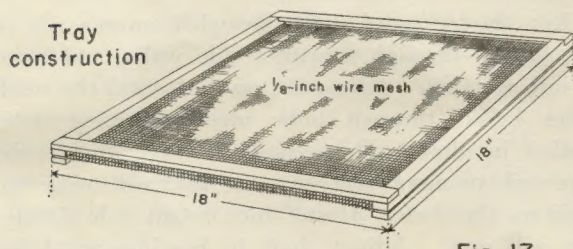
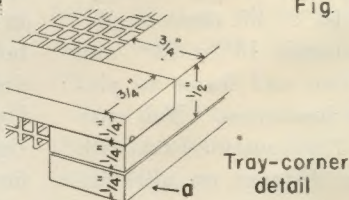


Fig. 17



Tray-corner detail

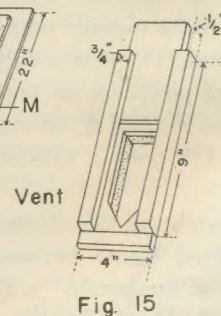


Fig. 15

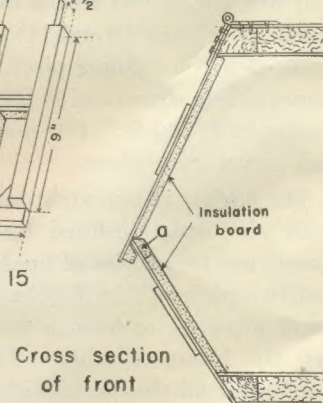


Fig. 16

To Make Tray Baffle

Underneath the straight 18" edge of the plywood piece *V*, which has been cut to the size shown in the cutting plan (fig. 1), nail a piece of fire-resistant material cut to fit. Over this nail a strip of lumber $\frac{3}{8}$ " x $\frac{1}{2}$ " x 18", with the $\frac{1}{2}$ " side flat. On the top of *V* along the two sides, fasten the two lower tray slides *Z*. (See fig. 8.)

If you wish to make the top of baffle slides *Y* flush with edge of door opening and tray baffle, put a piece of lumber $\frac{1}{4}$ " x $\frac{3}{4}$ " on top of each slide to fit between door and baffle.

To Make Trays

For each tray use four 18" pieces of $\frac{1}{4}$ " x $\frac{3}{4}$ " lumber and two 18" pieces of $\frac{1}{2}$ " x $\frac{3}{4}$ " lumber. At each end of the $\frac{1}{2}$ " x $\frac{3}{4}$ " pieces cut a notch out of the $\frac{1}{2}$ " width, $\frac{3}{4}$ " back from the end and $\frac{1}{4}$ " deep. Into these notches fit the two $\frac{1}{4}$ " x $\frac{3}{4}$ " x 18" pieces as shown at *a*, figure 17, to make a frame 18" square.

From the $\frac{1}{4}$ " x $\frac{3}{4}$ " piece that forms the front of the tray, cut out a shallow $\frac{1}{8}$ " strip or groove the full length of the underside, about $\frac{1}{8}$ " in from the front edge. This is to hold the end of the screen as it is folded up.

Put a piece of mesh screen $17\frac{3}{4}$ " x $18\frac{1}{2}$ " on the underside of the frame. Bend front end of wire mesh so that it fits in the groove; then place the other two $\frac{1}{4}$ " x $\frac{3}{4}$ " x 18" pieces of wood over the screen on each side and nail together to form the tray (fig. 17). Make eight trays.

When using trays, cover the screen with cheesecloth or old curtain netting to keep food off the metal. Fasten cloth firmly to end of tray nearest the fan, so cloth won't blow loose.

To Complete the Drier

Line each side of heating chamber with fire-resistant material.

Place back of cabinet in position and fasten with long screws so that it may be removed for occasional cleaning of the inside of the drier.

Put pulley and belt in place, line up with motor, and drier will be ready to operate.

Adjust Thermostat

If your thermostat doesn't have a calibrated dial, follow manufacturer's directions carefully for adjusting temperature. If no directions are provided, adjust screw so contacts touch. Then give one more complete turn of the screw (fig. 20). Place oven or other type of thermometer on the tray in center of drier. Start drier, and check temperature at which current is cut off. Wait until current turns on and check again. If the midpoint between "on" and "off" is more than 5° from desired temperature, adjust screw. Repeat check until desired 150° F. temperature point is located.

Oil the Motor

Oil motor according to manufacturer's directions. Keep bearings well oiled—a drop or two of oil each time the drier is used.

DIRECTIONS FOR DRYING

Have Food Ready

Dry only fruits and vegetables that are fresh, ripe, and sound—just right for table use. One bit of decay or mold may give bad flavor to a trayful.

Handle only what you can dry at one time. Speed—from garden to storage—is one success secret of drying.

Wash the food well. Get off all dirt and any insecticide.

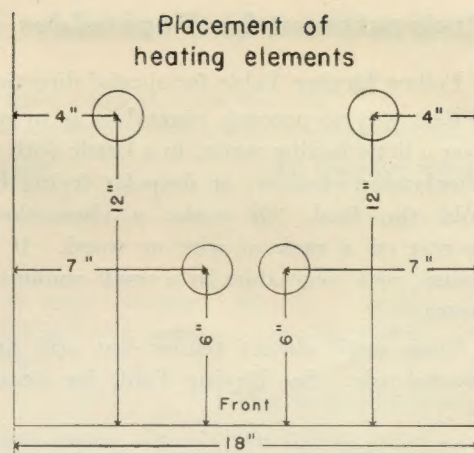
Pare with as sharp a knife as you have with a blade of stainless steel, glass, plastic or silver—so foods won't be discolored.

Pretreatment for Fruits

Follow Drying Table for special directions.

Light-colored fruits tend to darken in drying and storage. Best known way to hold their color—and flavor and vitamins A and C—is to sulfur them.

Fig. 18



Thermostat

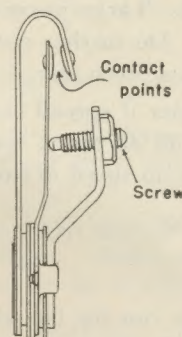
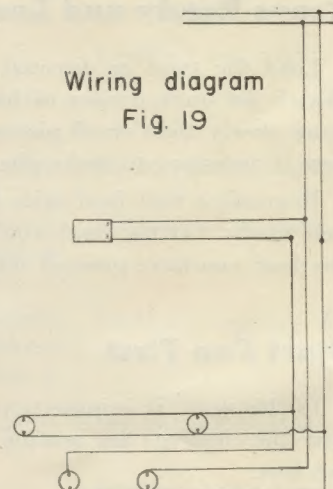


Fig. 20

Wiring diagram

Fig. 19



For safety in operating the dehydrator, guard the belt from motor to fan or place dehydrator with motor side next to wall.

TO SULFUR OUTDOORS.—Get a box big enough to be turned upside down over trays—don't use metal trays. Leave a flap open near bottom of box for air to enter. Close this flap after the sulfur has burned. The sulfur (1 level teaspoon per pound of prepared fruit) is wrapped in paper and put in a discarded dish or pan beside trays. The paper is lighted and the box set snug against the ground, over trays and dish, to prevent loss of sulfur fumes.

TO SULFUR INDOORS.—Soak fruit 15 minutes in a solution of 3½ tablespoons of potassium metabisulfite or sodium sulfite to 1 gallon of water. Your druggist may order these chemicals if you can't buy either of them locally.

Sulfured food may have a strong odor or taste when dried, but the taste disappears in cooking.

A less effective way to treat light-colored fruits: (1) Dip in a salt-water bath of 4 to 6 tablespoons salt to 1 gallon of water for about 10 minutes.

Pretreatment for Vegetables

Follow Drying Table for special directions.

Best way to precook vegetables is to steam them over a little boiling water, in a kettle with a tight lid. A colander, strainer, or deep-fat frying basket will hold the food. Or make a cheesecloth basket, to rest on a rack of wire or wood. If you can't steam, cook vegetables in a small amount of boiling water.

Cook until almost tender but still firm, is the general rule. See Drying Table for steaming time.

Trays Ready and Loaded

Load the trays as directed in the Drying Table. Watch for uneven sizes of food. Large pieces dry more slowly than small pieces. Do further cutting here if necessary to make pieces of even size.

Remember that food dries faster if spread evenly and thinly. If the food won't fill all trays, spread the food you have over all trays, to speed drying.

Start Fan First

In this drier, it is important to run the fan whenever the elements are heating. So always start the fan first.

Heat the Drier—When and How

Set the thermostat if you have a calibrated dial. Usual temperature desired for drying is 150° F.

If one tray load of food is prepared at a time, you can start heating the drier when the first tray goes in. If all food is ready to dry at once—as with sulfured fruit—preheat the drier; then put in trays of food.

MANAGE VENTS THIS WAY.—Have vents closed while the drier heats. When the thermostat begins to operate, open each vent one-half inch. If all trays are put in at once, it may take an hour or more for the thermostat to operate after all trays are in. If trays are put in one at a time, the thermostat will operate in about half an hour after the last tray is in.

Leave the vents open one-half inch for one-half hour. Then open them to the end of the slanting opening. Leave at this position 1 hour, then open the vents one-half inch more and leave that way until drying is done. If drier has only a small load of food, you may omit this last adjustment.

Shifting and Stirring

It is not necessary to stir the food during drying. However, stirring a few times will help most foods to dry faster.

It should not be necessary to change places of trays in this drier. But if some trays do dry more slowly than others, exchange their positions with the faster drying trays a time or two during drying.

When Food is Done

Most vegetables take 4 to 12 hours to dry; fruits, 6 hours or longer. When food seems done, cool a sample and test according to Drying Table.

Package and Store

Cool the food, and package with care at once. Dampness may spoil well-dried foods. Insects can enter tiny cracks in a seal or seaming.

Fill containers tightly without crushing food. This forces air out. Then seal tightly.

Glass jars, the sort used in home canning, are fine for dried foods. If old jar rings are used, use two for a tight seal. Or pack food in old coffee cans or tins with tight lids. You can use Scotch tape, adhesive tape, or cloth dipped in paraffin around a lid to help make a seal.

ANOTHER POSSIBILITY.—Use heavily waxed paper cartons with tight lids, or get bags made for storing dried foods. These should be moistureproof and vaporproof. Paper is not safe from insects and mice. So store small packages in a crock, lard can, or tin with good lid.

Properly dried and stored, most vegetables keep well about 6 months. Tomatoes and mushrooms are exceptions; use them within about 3 months. Fruits well dried keep a year or longer.

It pays to package vegetables in fairly small quantities. Small packets are handy. Roughly, 1 to 2 cups of dried food serve 6. Leafy vegetables take 4 to 6 cups. You can pack accordingly. Also, dried food is best soon after opening. And you don't expose the lot to air and possible dampness when you take out a little.

Store in a dry, cool, dark place to hold food value and flavor. If necessary make a blackout for glass jars.

Examine dried food in storage occasionally. If you find signs of moisture, heat food again to 150° F. until dry when tested. Then repackage.

DRYING TABLE FOR FRUITS AND VEGETABLES

1. Spread in single layers on trays unless otherwise noted.

2. Usual drying temperature is 150° F. Onions or cabbage require temperature not above 135°.

FOOD	PREPARATION FOR DRYING	DRYNESS TEST
FRUITS		
Apples.....	Pare, core, and cut in one-fourth inch slices or rings. Sulfur outdoors 30 minutes, or dip in solution. Spread not more than one-half inch deep on trays—overlap rings.	Pliable, springy feel, creamy white.
Apricots.....	Same as peaches.....	Pliable and leathery.
Berries.....	No pretreatment. Leave whole, except strawberries, which should be cut in half.	No visible moisture when crushed.
Cherries.....	Remove stems and pits. If juicy, drain about 1 hour.....	Leathery but sticky.
Figs.....	Steam or dip in boiling water for 1 minute. Peel if desired; cut large figs in half.	Glossy skin, slightly sticky.
Grapes.....	Leave whole, remove stems. Dip in boiling water to crack skins.	Pliable, dark brown.
Nectarines and Peaches.	Peel if desired. Cut in halves, remove pits. Sulfur outdoors, peeled 30 minutes, unpeeled 2 to 3 hours; or dip in solution; or precook. Dry pit side up.	Pliable and leathery.
Pears.....	Pare and remove core and woody tissue. Cut into one-fourth inch slices or rings, or into quarters or eights. Sulfur outdoors 2 to 4 hours, according to size of pieces; or dip in solution; or precook.	Leathery, springy feel.
Plums.....	Same as prunes. Use freestone kinds. Sulfuring 20 to 25 minutes helps them to keep better.	Pliable and leathery.
Prunes.....	Cut in halves and remove pits or leave whole. Halves: No pretreatment. Whole: To soften and crack skins and to help fruit dry better, hold in steam or boiling water for 2 minutes, or dip in a boiling lye bath (3 tablespoons lye to 1 gallon water) for one-half minute.	Pliable and leathery.
VEGETABLES		
Asparagus.....	Use 3-inch tips only, split lengthwise after cooking. Steam 10 minutes, or until tender but firm.	Very brittle, greenish black.
Beans, green lima..	Shell. Steam 15 to 20 minutes, or until tender but firm.....	Shatter when hit with a hammer.
Beans, snap.....	Trim and slice lengthwise or cut in 1-inch pieces. Steam about 20 minutes, or until tender but firm. Spread about one-half inch deep on trays.	Brittle, dark green to brownish.
Beets.....	Trim off all but 1 inch of tops and roots. Steam whole about 30 to 60 minutes, depending on size, or until cooked through. Cool and peel. Cut in one-fourth inch cubes, or slice one-eighth inch thick. Spread not more than one-fourth inch deep on trays.	Brittle, dark red.
Broccoli.....	Trim, slice lengthwise in one-half inch strips. Steam 10 minutes or until tender but firm.	Brittle, very dark green.
Brussels sprouts...	Cut lengthwise, one-half inch thick. Steam until tender, 12 minutes.	Crisp.
Cabbage.....	Trim, cut in strips one-fourth inch thick. Steam 5 to 10 minutes, or until tender but firm. Spread evenly to a depth of not more than 1 inch. (See note 2 above.)	Crisp, pale yellow to green.

FOOD	PREPARATION FOR DRYING	DRYNESS TEST
VEGETABLES		
Carrots	Steam whole about 20 minutes, or until tender but firm. Scrape or peel. Slice crosswise one-eighth inch thick, or dice in one-fourth inch cubes. Or shred before steaming. Spread not more than one-half inch deep on trays.	Very brittle, deep orange.
Cauliflower	Separate into flowerlets, cut large ones in half. Dip in salt solution (6 tablespoons salt per gallon of water). Steam 10 minutes, or until tender but firm.	Hard to crisp, tannish yellow.
Celery	Strip off leaves, cut stalks into one-half inch pieces. Steam 10 minutes or until tender. Stir occasionally during drying.	Very brittle.
Corn	Husk, trim. Steam on cob until the milk is set, about 15 minutes. Cut from the cob. Spread one-half inch deep.	Shatters when hit with a hammer.
Eggplant	Peel and slice one-eighth to one-fourth inch thick. Dip immediately in a solution of 6 tablespoons vinegar to 1 gallon water for 15 minutes. Steam at once for 5 to 10 minutes or until tender when tested with a fork.	Leathery to brittle.
Greens	Trim off tough stems. Steam 5 to 20 minutes or until tender. Spread leaves that mat, such as spinach, about one-fourth inch deep; others, not more than 1 inch.	Crisp, very dark green.
Mushrooms	Peel the larger mushrooms. Dry whole or sliced, depending on size. No precooking necessary. If stems are tender, slice for drying; if tough, discard. Spread not more than one-half inch deep on trays.	Leathery to brittle.
Okra	Use young, tender pods only. Cut one-half inch, crosswise slices or split lengthwise. Steam 5 to 8 minutes. Spread not more than one-half inch deep on trays.	Very brittle.
Onions	Peel, slice into one-eighth inch rings. Steam 5 to 10 minutes. If dried for seasoning, do not steam. (See note 2, p. 11.)	Very crisp.
Parsnips	Same as carrots	Very brittle.
Peas, green	Steam shelled peas 15 minutes, until tender but firm. Stir frequently during the first few hours of drying.	Shatter when hit with a hammer.
Peppers and Pimientos.	Cut in one-half inch strips or rings. Remove seeds. Steam 10 minutes. Spread rings 2 layers deep—strips not more than one-half inch deep.	Pliable.
Pumpkin	Quarter, remove seeds and pith, cut in 1-inch strips, and peel. Slice strips crosswise one-fourth inch thick. Steam 8 to 13 minutes, until slightly soft but not sticky.	Leathery.
Rhubarb	Cut in 1-inch lengths. Dip in actively boiling water 3 minutes.	Very brittle, dark green and red.
Rutabagas	Quarter, peel, cut in one-eighth inch slices or strips. Steam 15 minutes, or until tender but firm.	Leathery.
Soybeans, edible green.	Blanch pods in steam 10 to 15 minutes, or until beans are tender but firm. Shell.	Shatter when hit with a hammer.
Squash, Hubbard . .	Same as pumpkin	Leathery.
Squash, summer and Zucchini.	Trim, slice one-fourth inch thick without peeling, steam 6 to 8 minutes, or until just tender.	Leathery to brittle, yellow.
Tomatoes (meaty varieties only).	Dip in boiling water for 1 minute. Peel, remove stem end, slice one-eighth inch thick.	Leathery, dull red.
Turnips	Same as rutabagas	Leathery.

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